Improve the environment, improve health in Côte d’Ivoire

Sorting coffee in Côte d'Ivoire: economic progress is taking its toll on the environment and people's health. (IDRC Photo: Neil McKee)

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In Côte d’Ivoire, researchers are looking at ways to reduce the harmful health impacts of unbridled agricultural development and of a large hydroelectric dam. But there’s a twist — rather than focusing on health services, they are trying to improve people’s health by better managing the local resource base. Their work is supported by Canada’s International Development Research Centre (IDRC). This is one of many innovative projects highlighted in a new Web site on IDRC’s contributions to sustainable and equitable development, launched to mark the World Summit on Sustainable Development (WSSD), from August 26 to September 4, 2002.

For most of its history, the town of Buyo has been an isolated backwater in the humid equatorial forests of southwestern Côte d’Ivoire. In the late 1960s, the national government launched an ambitious plan to develop the region’s rich resource base. The key economic drivers were policies and programs to promote intensive agriculture, geared largely to export markets, and a hydroelectric dam built in 1980 on the Sassandra River.

Today, Buyo is part of Côte d’Ivoire’s "new coffee and cacao belt" and a magnet for economic migrants. Most come in search of land on which to grow cash crops. Some find work in forestry operations or in the thriving fishery that has blossomed on Lac Buyo. The flood of immigrants to Buyo and surrounding villages has pushed the population from 7,500 inhabitants in 1972 to more than 100,000 today.

The price of progress

Buyo’s rapid transformation from forests to fields has come at a price. A 1996 study by a team of Ivorian researchers, led by Dr Pascal Houénou from the University of Abobo-Adjamé, catalogued a litany of ongoing problems, many of which stem from the success of regional development plans. "Unfortunately," says Houénou, "the agricultural policies put in place have translated into a veritable race against the clock as people clear as much land as possible to secure ownership and title in order to bequeath it to their families."

Figures show that land cleared for coffee and cacao production has grown a hundred-fold since 1975. Palm oil and rubber production has also expanded. Land is now a highly marketable commodity subject to speculation and disputes, especially between the region's original inhabitants — the Kouizé, Bété, and Gnanboua — and new migrants to the region. A presidential dictum stating that "the land will belong to he who exploits it" has done little to ease tensions or promote integration.

Troubled waters

Economic development has also left its mark on the environment. As savannas replace forests, less rain falls and biodiversity disappears. The heavy use and misuse of fertilizers and pesticides on crops is also affecting the quality of water in Lake Buyo and its watershed. Pesticides such as DDT, lindane, aldrin, and heptachlor that are banned or tightly regulated elsewhere in the world are in common use here. In warm aquatic systems, like Lac Buyo, these pollutants are easily transformed into other compounds that can readily enter the food chain.

Water quality is further compromised by the lack of sanitation and waste disposal facilities throughout the area. " Lac Buyo has become a dump," says Houénou.

Water hyacinth and algae thriving on the nitrates and phosphorus flushed into the local watershed from fields, villages, and the town of Buyo are choking waterways and reducing the dissolved oxygen content of the water.

The effects of all these changes on the local population are noticeable. Water-borne diseases, such as malaria and diarrhea, and respiratory ailments are on the rise. Malnutrition and poverty are widespread despite decades of economic growth.

The search for solutions

Finding solutions to the health problems is the goal of a follow-up study led by Houénou and supported by Canada's International Development Research Centre (IDRC). This time around Houénou and a team of researchers are using an "ecosystem approach to human health." The idea is to find ways of managing the local environment to improve its health and the health of the villagers and townspeople living in it.

The key to the "ecosystem approach" is a broader understanding of the role social, cultural, economic, and environmental factors play in the health of the local population and how those factors interact. The active involvement of the community is therefore critical to its success.

In a workshop that brought together Houénou's research team, administrative authorities, nongovernmental organizations, and village leaders, as well as men, women, and children from across the study area, community priorities were set squarely on infrastructure improvement — electricity, better roads, more clinics and schools, wells and boreholes that were maintained and reliable. Housing was also a priority.

A first step: clean water

The group decided to restrict the study area to Buyo and its immediate surroundings and focus more intensely on the urban, agricultural, and aquatic components of the local ecosystem. Houénou and his team targeted the abysmal lack of safe drinking water for more immediate and direct action. They drew on the work of a group of IDRC-supported researchers from Latin America that has perfected a kit of affordable, efficient, community-based water management technologies.

The Buyo researchers chose to pilot slow sand filters to provide potable water to households in the study area. Slow sand filters are a proven technology, are easily constructed and maintained, and effectively remove 80-90 % of all microbiological contaminants while significantly reducing the level of heavy metals in water.

The filters are part of a larger information, education, and communication strategy designed to educate the population about water-borne diseases and some of the other problems associated with the way water resources are managed. Researchers will also examine how social and economic practices contribute to the problem.

A transdiciplinary approach

On the research side, health professionals, social scientists, soil scientists, chemists, biologists, a toxicologist, and a group charged with transferring technology to the local population will all contribute to the pool of data being collected. Before starting their work, however, the scientific team first had to define a common research question and common strategy for tackling it. This transdisciplinarity is a key element in the ecosystem approach.

This approach often unearths links or factors not evident at first glance. For example, seasonal changes in the level of water in Lac Buyo influence the way biological and chemical contaminants move through the lake. The observed effects may also change seasonally depending on how people use water resources at different times of year.

Gender matters

This approach also underscores the "gendered" aspect of resource use or misuse and resulting health effects. For example, the greater amount of time that women and children spend indoors or around their home, compared to men, may place them at greater risk of vector-borne diseases like malaria. They are often the first food source mosquitos encounter as they emerge from the thatch or eaves of houses to feed in the evenings.

In Buyo, the health effect on women and young children of exposure to pesticides and other agrochemicals has been given priority. The testing of mothers' milk and hair for pollutants will help quantify the risk. Socioeconomic factors, such as the use of discarded pesticide containers as water carriers or a diet rich in fish, will be examined to see if and why certain populations are at greater risk.

Implementing change

Once the researchers have completed their analysis, a clearer picture of the determinants of people's health will emerge. Then will come the work of devising solutions to the problems. Knowing what factors affect their health can help communities make informed decisions about how best to protect themselves and their environment.

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